

## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Kevin K. Lehmann et al. : Art Unit:  
Serial No.: To Be Assigned : Examiner:  
Filed: Herewith :  
For: FIBER OPTIC BASED :  
CAVITY RING-DOWN  
SPECTROSCOPY  
APPARATUS



#8  
12 6 12  
JSS

## INFORMATION DISCLOSURE STATEMENT

Assistant Commissioner for Patents  
Washington, D.C. 20231

S I R :

Pursuant to 37 C.F.R. §§ 1.97 and 1.98 and to the duty of disclosure set forth in 37 C.F.R. § 1.56, the Examiner in charge of the above-identified application is requested to consider and make of record the references listed on the PTO 1449 (R&P) submitted herewith. A copy of each of the listed references is also enclosed.

Although the information submitted herewith may be "material" to the Examiner's consideration of the subject application, this submission is not intended to constitute an admission that such information is "prior art" as to the claimed invention.

Japanese Reference 63013386 is not in the English language, but an English abstract thereof is submitted herewith.

In accordance with 37 C.F.R. § 1.97(g), the filing of this Information Disclosure Statement shall not be construed to mean that a search has been made. This information disclosure statement is being filed within three months of the filing date of the above-referenced application. No Fee or certification is required. 37 C.F.R. § 1.97(b).

Respectfully submitted,

  
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Jacques L. Etkowicz, Reg. No. 41,738  
Attorneys for Applicant

Encls.: PTO Form 1449,  
Copy of (40) References and 1 abstract

Dated: December 12, 2001

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The Assistant Commissioner for Patents is hereby authorized to charge payment to Deposit Account No. 18-0350 of any fees associated with this communication.

**EXPRESS MAIL** Mailing Label Number: EL 743541648US  
Date of Deposit: December 12, 2001

I hereby certify that this paper and fee are being deposited, under 37 C.F.R. § 1.10 and with sufficient postage, using the "Express Mail Post Office to Addressee" service of the United States Postal Service on the date indicated above and that the deposit is addressed to the Assistant Commissioner for Patents, Washington, D.C. 20231.

  
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Kathleen Libby

FORM PTO-1449 U.S. DEPARTMENT OF COMMERCE (Rev. 2-32) PATENT AND TRADEMARK OFFICE  <b>Information Disclosure          Statement by Applicant</b>  (Use several sheets if necessary)	ATTY. DOCKET NO.  PRU-101US	SERIAL NO  To Be Assigned
	APPLICANT Kevin K. Lehmann et al.	
	FILING DATE Herewith	GROUP To Be Assigned



## U.S. PATENT DOCUMENTS

Exmr Initial	Document Number	Date	Name	Class	Sub Class	Filing Date
	1,719,443	07/02/1929	Nichterlein			
	3,402,364	09/17/1968	De Lang			
	3,711,788	01/16/1973	Forkner			
	3,976,368	08/24/1976	McCann et al.			
	3,982,203	09/21/1976	De Wit			
	4,161,436	07/17/1979	Gould			
	4,525,034	06/25/1985	Simmons			
	5,578,793	03/25/1986	Kane et al.			
	4,677,639	06/30/1987	Sasser			
	4,740,986	04/26/1988	Reeder			
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	5,463,493	10/31/1995	Shah			
	5,483,342	01/09/1996	Rockwell			
	5,528,040	06/18/1996	Lehmann			
	5,835,231	11/10/1998	Pipino			
	5,912,740	06/15/1999	Zare et al.			
	5,973,864	10/26/1999	Lehmann et al.			
	6,097,555	08/01/2000	Lehmann et al.			
	6,172,823	01/09/2001	Lehmann et al.			

## FOREIGN PATENT DOCUMENTS

Exmr Initial	Document Number	Date	Country	Class	Sub Class	Translation YES   NO
	63013386	01/20/1988	Japan (AbstractOnly)			

## OTHER DOCUMENTS

(Including Author, Title, Date, Pertinent Pages, Etc.)

	1)	J. White, Long Optical Paths of Large Aperture, 32 <i>J. Opt. Soc. Amer.</i> , 285 (May, 1942).
	2)	D. Herriott et al., Off-Axis Paths in Spherical Mirror Interferometers, 3 <i>Appl. Opt.</i> (4), 523 (Apr., 1964).
	3)	A. O'Keefe & D. Deacon, Cavity Ring-Down Optical Spectrometer for Absorption Measurements Using Pulsed Laser Sources, 59 <i>Rev. Sci. Instrum.</i> , 2544 (Dec., 1988).

Examiner	Date Considered
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**Examiner:** Initial if citation considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

FORM PTO-1449 (Rev. 2-32) U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE  <b>Information Disclosure          Statement by Applicant</b>  (Use several sheets if necessary)	ATTY. DOCKET NO.  PRU-101US	SERIAL NO  To Be Assigned	Jc-618 U.S. PTO <b>10/017367</b> 12/12/01
	APPLICANT Kevin K. Lehmann et al.		
	FILING DATE Herewith	GROUP To Be Assigned	

**OTHER DOCUMENTS**  
 (Including Author, Title, Date, Pertinent Pages, Etc.)

		4)	D. Romanini & K. Lehmann, Ring-Down Cavity Absorption Spectroscopy of the Very Weak HCN Overtone Bands With Six, Seven, and Eight Stretching Quanta, 99 <i>J. Chem. Phys.</i> (9), 6287 (Nov. 1, 1993)
		5)	G. Rempe et al., Measurement of Ultralow Losses in an Optical Interferometer, 17 <i>Opt. Letters</i> (5), 363 (Mar. 1, 1992).
		6)	T. Yu & M. Lin, Kinetics of Phenyl Radical Reactions Studied by the "Cavity-Ring-Down" Method, 115 <i>J. Am. Chem. Soc.</i> , 4371 (1993).
		7)	G. Meijer et al., Coherent Cavity Ring Down Spectroscopy, 217 <i>Chemical Physics Letters</i> (1,2), 112 (Jan. 7, 1994).
		8)	J. Scherer et al., Cavity Ring Down Dye Laser Spectroscopy of Jet-Cooled Metal Clusters: CU <sub>2</sub> and CU <sub>3</sub> , 172 <i>Chemical Physics Letters</i> (3,4), 214 (Sep. 7, 1990).
		9)	F. Stoelkel & G. Atkinson, Time Evolution of a Broadband Quasi-cw Dye Laser: Limitation of Sensitivity in Intracavity Laser Spectroscopy, 24 <i>Applied Optics</i> (21), 3591 (Nov. 1, 1985).
		10)	K. Lehmann & D. Romanini, Molecules in the Stellar Environment, <i>Experimental Measurement of Weak Band Intensities in Molecules in the Stellar Environment</i> , (Springer, 1994).
		11)	G. Gould et al., Crossed Roof Prism Interferometer, 1 <i>Applied Optics</i> (4), 533 (July 1962).
		12)	A. Pipino et al., Evanescent Wave Cavity Ring-Down Spectroscopy with a Total-Internal Reflection Minicavity, 68 (8) <i>Rev. Sci. Instrum.</i> , 2978 (August 1997).
		13)	Stewart G, Atherton K, Yu H, Culshaw B. "An investigation of an optical fibre amplifier loop for intracavity and ring-down cavity loss measurements." <i>Meas. Sci. Technol.</i> 12: 843-849 (2001).
		14)	Dmitriev AL, Yanshen Z, Xinyu M. "Optical-fiber passive ring resonator in a low-mode radiation-propagation regime." <i>J. Opt. Technol.</i> 67: 219-221 (2000)
		15)	Blair S, Chen Y. "Resonant-enhanced evanescent-wave fluorescence biosensing with cylindrical optical cavities." <i>Applied Optics</i> . 40: 570-582 (2001)
		16)	Littlejohn D, Lucas D, Han L. "Bent Silica Fiber Evanescent Absorption Sensors for Near-Infrared Spectroscopy." <i>Applied Spectroscopy</i> . 53: 845-849 (1999)
		17)	Messica A, Greenstein A, Katzir A. "Theory of fiber-optic evanescent-wave spectroscopy and sensors." <i>Applied Optics</i> 35: 2274-2284 (1996)
		18)	Trautmann et al., "Determination of the Deuterium Abundance in Water Using a CW Chemical DF Laser", <i>Appl Phys.</i> , 24: No. 1, 49-53 (1981)
		19)	Spammer, S, Swart, P, Booyesen, A. "Interferometric distributed optical-fiber sensor", <i>Applied Optics</i> Vol. 35, No. 22: 4522-4525 (August 1996)

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